

**ALTERNATIVES
A-J**

B-0001516

B-001516

DRAFT ALTERNATIVES A - J

INTRODUCTION

The Program has combined the best elements of the 20 draft alternatives to produce 10 draft alternatives for review. The following overviews of the alternatives provide more detailed descriptions than those included in the Phase I Progress Report distributed earlier this month. Please keep in mind that these are *draft* alternatives and not final products. As with previous drafts, they are subject to change based on public and stakeholder input.

The 10 draft alternatives are the result of a consolidation and refinement of the 20 draft alternatives presented during meetings in February 1996. The 20 draft alternatives represented a broad range of potential solutions to Bay-Delta problems. We received considerable valuable written and verbal input on the "20" resulting from the discussions during the public workshop, the February meeting of the Bay-Delta Advisory Council, and meetings with CALFED agency staff. The Program staff considered this input, evaluated the alternatives against the Program objectives, looked for ways to refine the alternatives, and to consolidate similar alternatives.

The consolidation and refinement was *not* a screening process. We did not eliminate any concepts represented by the "20". The 10 draft alternatives represent the same broad range of potential solutions to Bay-Delta problems as represented by the 20 draft alternatives. Work will continue on refining, consolidation, and screening as we move towards a goal of reducing the set of alternatives to a more manageable set of 3 to 5 alternatives. Just as previous refinements have changed the form of individual alternatives, you should expect that these alternatives will continue to change. Therefore, none of the current 10 draft alternatives are likely to make it to the set of 3 to 5 unchanged.

SUMMARY TABLE AND MATRIX

To help you organize the information contained in the alternative overview descriptions, a table and a matrix are provided on the following pages. The table shows the major emphasis for each alternative.

The matrix provides more detail by highlighting each alternative's main approaches to achieving the primary objectives. Alternatives are listed in columns. The rows catalog the general approaches to resolving problems in the Bay-Delta. These approaches are grouped under the four primary objective areas: Water Supply, Water Quality, Ecosystem Quality, and System Vulnerability.

The summary table and matrix allow you to scan for draft alternatives containing actions or

combined actions of high interest. They also enable you to compare draft alternatives quickly and easily at a general level, in order to differentiate them.

ALTERNATIVE OVERVIEWS

Overviews of Alternatives A through J are provided following the summary table and matrix. The overviews provide a brief narrative summary of the 10 draft alternatives. Not every feature of the alternatives is described in these overviews. For instance, a new intake for the State Water Project at Italian Slough is used in several alternatives, but it is not specifically mentioned in the overviews. Detailed action-by-action listings of each alternative are included in Appendix B.

The overviews and the listings in Appendix B show approximate sizes for many features of each alternative. The sizes are used only to illustrate the general concept for the draft alternative and *should not* be viewed as absolute numbers. Many of the features are described with numerical ranges that also should not be considered absolute. For instance, showing a north of Delta storage at 0.5 to 1.0 MAF does not limit the final size to that range. After analysis in Phase II of the Program, this same storage could just as easily be 200 TAF or 3 MAF.

Each alternative overview includes a map showing major features.

Core Actions

As a reminder, a core action is an action at a specific implementation level that would be included as an element of *all* CALFED Program alternatives. A listing of core actions was provided above in a previous section.

Because core actions are common to all alternatives, they are not described in each alternative overview nor in the detailed action listings contained in Appendix B. However, remember that the core actions do include significant Bay-Delta habitat restoration, upstream habitat restoration, reductions in the effects of diversions, management of anadromous fish, reduction in export reliance (demand management), water supply enhancement, increasing water supply predictability, management of water quality, and improvements to system reliability. For example, *each* alternative includes significant upstream habitat restoration such as California's cost share portion of restoration actions in CVPIA.

Essential Elements

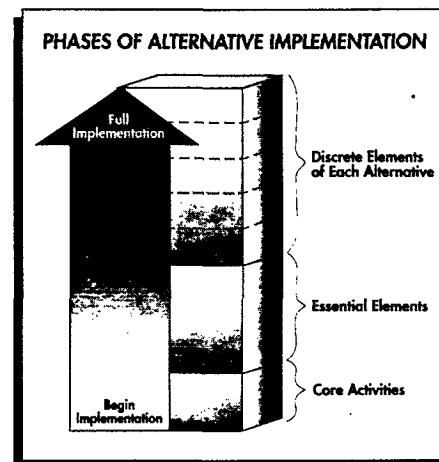
A listing of essential elements was provided above in a previous section. The essential elements are actions implemented in all the alternatives at levels higher than those represented in the core actions. For example, increased levels of demand management, more levee improvements, and more habitat restoration above the core levels of implementation are included in *all* alternatives.

The following overviews and the listings in Appendix B include the essential elements but do not specifically identify them as such.

Potential Sequencing

All alternatives can be staged over time. The individual actions included in each alternative offer many opportunities for staged implementation over short-term, intermediate-term, and long-term time frames. Staging of action implementation offers great benefits in financing the overall program in installments. Staging also works well with adaptive management by offering the potential to fine-tune the overall program solution in the future as more information becomes available.

Example sequencing diagrams are included with each alternative to show the general concept of how alternatives could be staged. Core actions are very well suited for early implementation. Many core actions could potentially be implemented prior to selection of the preferred alternative. The "essential elements" are also well suited for early funding and implementation following the core actions.



SUMMARY OF ACTIONS

Following the overviews is another set of tables that provides a summary of the major actions for each of the 10 draft alternatives. These tables are organized to present actions for habitat restoration, flood protection/levee stabilization, water storage/diversion management, water supply management, and water quality management. The tables show how actions vary by alternative. See appendix B for more information on the actions used for each alternative and the potential benefits associated with those actions.

Table of Alternatives

No.	Alternative	Major Emphasis
A	Extensive Demand Management EQ: modest SV: moderate WQ: modest	<ul style="list-style-type: none"> • Aggressive demand management upstream, in the Delta, and in export areas (BMP's and EWMP's to produce .5 to 1 MAF, Permanently fallow about 800,000 acres to produce 1.5 MAF, 1 MAF from Reclamation, Water bank and temporary land fallowing for 1 to 2 MAF) • 100 TAF in-Delta environmental storage
B	New Storage to Improve Delta Flow EQ: moderate SV: moderate WQ: extensive	<ul style="list-style-type: none"> • 1 to 2 MAF combined upstream storage and downstream storage • Improvement to address south Delta water quality, stage, and circulation • Increase groundwater conjunctive use (500 to 800 TAF) • Control water pollutant sources
C	Dual Delta Conveyance EQ: moderate SV: moderate WQ: moderate	<ul style="list-style-type: none"> • Screened diversion on Sacramento River and small east-side facility • Improved through-Delta conveyance • 1 to 2 MAF combined upstream and downstream storage • Permit maximum pumping capacity
D	Through Delta Conveyance EQ: moderate SV: moderate WQ: moderate	<ul style="list-style-type: none"> • Screened diversion on Sacramento River • East-side conveyance channel improvements • Supply 300 to 500 TAF from groundwater banking • 1 to 1.5 MAF downstream storage
E	Delta Channel Habitat and Conveyance EQ: moderate SV: moderate WQ: moderate	<ul style="list-style-type: none"> • Moderate level of habitat improvement to support sustainability of high-importance fish species (100 TAF San Joaquin water) • New diversion from Sacramento River to east-side channels • Extensive channel improvement to reduce velocities
F	Extensive Habitat Restoration with Storage EQ: extensive SV: moderate WQ: moderate	<ul style="list-style-type: none"> • High levels of habitat improvement to support sustainability of high-importance fish species (100 TAF of San Joaquin water) • 300 to 400 TAF in-Delta environmental storage • Extensive screening of diversions

Level of Implementation for:

EQ=Ecosystem Quality

SV=System Vulnerability (Levee Improvement)

WQ=Water Quality

Table of Alternatives

No.	Alternative	Major Emphasis
G	East Side Foothills Conveyance EQ: moderate SV: moderate WQ: moderate	<ul style="list-style-type: none"> • 5,000 to 7,000 cfs conveyance facility • New screened diversion facilities on Feather and Sacramento Rivers • Improvement to address south Delta water quality, stage, and circulation • 100 TAF in-Delta environmental storage
H	Chain of Lakes Conveyance EQ: moderate SV: modest WQ: extensive	<ul style="list-style-type: none"> • Multiple 5,000 cfs diversion points • 300 to 600 TAF in -Delta storage • Extensive levee improvements
I	West Side Conveyance and River Restoration EQ: moderate SV: modest WQ: moderate	<ul style="list-style-type: none"> • 5,000 to 10,000 cfs screened diversion at Shasta Lake • 2,000 to 7,000 cfs screened diversion at Lake Oroville • 6 to 8 MAF storage in Sacramento Valley • 10,000 to 15,000 cfs isolated transfer facility
J	East Side Conveyance EQ: extensive SV: modest WQ: extensive	<ul style="list-style-type: none"> • 15,000 to 20,000 cfs screened diversion(s) • 15,000 to 20,000 cfs isolated transfer facility • Improvement to address south Delta water quality, stage, and circulation

Level of Implementation for:

EQ=Ecosystem Quality

SV=System Vulnerability (Levee Improvement)

WQ=Water Quality

**CALFED Bay-Delta Program
Draft Alternatives**

Component	System Reoperation Alternatives			Reoperation and New Facilities Alternatives				New Facilities Alternatives		
	Extensive Demand Management	Extensive Habitat Restoration with Storage	Through Delta Conveyance	Dual Delta Conveyance	Delta Channel Habitat and Conveyance	East Side Foothills Conveyance	New Storage to Improve Delta Flow	Chain of Lakes Conveyance	West Side Conveyance and River Restoration	East Side Conveyance
	A	F	D	C	E	G	B	H	I	J
Water Supply (for all uses)										
Reduce Demand	Extensive	Modest	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Channel Capacity Improvements			Extensive	Moderate	Extensive		Modest			
Small Isolated Conveyance				5-7K cfs		5-7K cfs				
Large Isolated Conveyance								10-15k cfs	10-15k cfs	15-20k cfs
Upstream Surface Storage				0.5-1 MAF			0.5-1 MAF		6-8MAF	
In-Delta Surface Storage	100 TAF	400 TAF				100 TAF		300-600 TAF		
Downstream Surface Storage			1-1.5 MAF	0.5-1 MAF			0.5-1 MAF			
Conjunctive Use/Groundwater Banking	Extensive	Moderate	Moderate	Moderate	Moderate	Extensive	Moderate	Moderate	Moderate	Moderate
Water Transfers (Opportunity)	Modest	Modest	Modest	Extensive	Modest	Modest	Moderate	Modest	Moderate	Modest
Water Quality										
Pollutant Source Control	Modest	Moderate	Moderate	Moderate	Moderate	Moderate	Extensive	Extensive	Moderate	Extensive
Increase Flows for Water Quality	Modest	Modest	Modest	Moderate	Modest	Moderate	Moderate	Modest	Moderate	Modest
Ecosystem Quality										
Bay & Delta Habitat Restoration	Modest	Extensive	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Extensive
San Joaquin River Improvements	Modest	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Upper Sacramento Restoration	Modest	Extensive	Modest	Modest	Modest	Modest	Modest	Modest	Extensive	Extensive
Obtain Water for Environment	100 TAF	100 TAF	100 TAF	100 TAF	100 TAF	100 TAF	100 TAF	100 TAF	100 TAF	100 TAF
Relocate Export Diversion Point				Partial		Partial		Full	Full	Full
Screening Diversions	Modest	Extensive	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Extensive
System Vulnerability										
Stabilization	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Modest	Modest	Modest
Maintenance	Modest	Modest	Modest	Moderate	Modest	Moderate	Modest	Extensive	Extensive	Extensive
Emergency Response	Modest	Modest	Modest	Moderate	Modest	Moderate	Modest	Extensive	Extensive	Extensive

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